Remarks

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 1-19 are pending in the application, with claims 1, 3, 5, 9, 12 and 15 being the independent claims. No new claims are sought to be added. Claims 1, 3, 5, 9, 10, 12, 13, 15 and 18 have been amended.

These changes are believed to introduce no new matter, and their entry is respectfully requested.

Based on the above amendment and the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

Rejections under 35 U.S.C. § 102

The Examiner rejected claim 1-19 under 35 U.S.C. § 102(b) as allegedly being anticipated by US Published Application No. US 2001/0033611 A1 to Grimwood *et al.* ("Grimwood"). For the reasons set forth below, Applicants respectfully traverse.

Independent Claim 1

Applicants maintain that Grimwood does not teach or suggest each and every feature of claim 1. For example, Grimwood does not teach or suggest "upon termination of transmission of the first signal to the one or more remote devices, transmitting a second signal using a second transmitter in the central entity to the one or more remote devices, wherein the second signal includes timing information based on the second symbol clock."

Independent claim 1 recites a method for *maintaining synchronization* in a communication system. The method includes the steps of:

> synchronizing a first symbol clock and a second symbol clock in the central entity;

> transmitting a first signal using a first transmitter in the central entity to the one or more remote devices, wherein the first signal includes timing information based on the first symbol clock; and
>
> *upon termination of transmission of the first signal to the one or more remote devices, transmitting a second signal using a second transmitter in the central entity to the one or more remote devices, wherein the second signal includes timing information based on the second symbol clock.* (emphasis added)

Transmission of a second signal, using a second transmitter, if and when the first signal is terminated facilitates maintaining synchronization even though there may be a loss of downstream signal. Having a redundant second transmitter in the central entity minimizes the need for re-ranging and the occurrence of poorly timed upstream bursts.

Grimwood teaches an apparatus and a method for synchronizing an upstream signal to a downstream signal with equal or different clock rates. The central unit of Grimwood generates a chip clock from a mater clock and modulates downstream data using this chip clock (as opposed to synchronizing two symbol clocks) (Grimwood, paragraph [0048]). There is no redundant second transmitter in Grimwood's central entity. The remote units (RU) of Grimwood use a master clock recovery to recover the master clock from the downstream signal. In RUs, upstream transmissions use a chip clock and upstream carrier derived from the recovered master clock signal (Grimwood, paragraphs [0049] and [0050]). Grimwood does this to avoid the need for an upstream clock recovery circuit (Grimwood, paragraph [0057], lines 6-8).

Grimwood does not teach or suggest that the central entity (central unit) transmits two downstream signals, using two transmitters, to one or more remote devices, with the second transmission occurring after the first transmission has terminated. The claimed "first signal" and the claimed "second signal" include timing information based on the first and the second clocks, respectively (these two clocks were previously synchronized).

The Examiner, on page 3 of the Office Action, relies at least in part on Figure 7 of Grimwood (elements 302 and 305) to allegedly teach the claimed combination. Figure 7 of Grimwood, operated at a remote user (RU) site, calculates the RU kiloframe offset adjustment. In step 302, the process waits for a UCD and a sync message in downstream data and if the CU timestamp is not phased locked to RU kiloframe, the process waits for a second UCD message (305). In contrary, claim 1 recites "*upon termination of transmission of the first signal* to the one or more remote devices, transmitting a second signal *using a second transmitter* in the central entity to the one or more remote devices, wherein the second signal includes timing information based on the second symbol clock."

Since Grimwood does not teach or suggest each and every feature of independent claim 1, it cannot anticipate that claim. Accordingly, Applicants respectfully request that the rejection of claim 1 under 35 U.S.C. § 102(b) be reconsidered and withdrawn.

Dependent Claim 2

Claim 2 depends from and further limits claim 1. It distinguishes from Grimwood for at least the reasons set forth above with respect to claim 1 and further in view of its own features.

Also, Applicants assert the dependent claim 2 is patentable over the applied reference in view of its additional combinations of distinguishing features. For example, the "transmitting a notification message to the one or more remote devices indicating that the first signal will be terminated prior to the termination of transmission of the first signal" feature recited in claim 2, is not explicitly or implicitly taught or suggested by Grimwood. The Examiner, on page 6 of the Office Action, relies on Figure 6 and paragraph [0014] of Grimwood to allegedly show this feature. Grimwood discloses that timestamp messages are normally sent in downstream to establish reference to the CU master clock. However, Grimwood does not teach or suggest transmitting a *notification message* to the one or more

remote devices indicating *that the first signal will be terminated* prior to the termination of transmission of the first signal, as recited in claim 2.

Accordingly, Applicants respectfully request that the rejection of claim 2 under 35 U.S.C. § 102(b) be reconsidered and withdrawn.

Independent Claim 3

The Examiner rejected claim 3 under 35 U.S.C. § 102(b) as allegedly being anticipated by US Application Publication No. US 2001/0033611 A1 to Grimwood *et al.* ("Grimwood"). For the reasons set forth below, Applicants respectfully traverse.

Independent claim 3 recites a method for *maintaining synchronization* in a communication system. The method includes the steps of:

> synchronizing a first symbol clock and a second symbol clock in the central entity;
>
> transmitting a first signal using a first transmitter in the central entity to the one or more remote devices, wherein the first signal includes timing information based on the first symbol clock and data having a first forward error correction (FEC) alignment; and
>
> *upon termination of transmission of the first signal to the one or more remote devices, transmitting a second signal using a second transmitter in the central entity to the one or more remote devices, wherein the second signal includes timing information based on the second symbol clock and data having a second FEC alignment that is synchronized with the first FEC alignment.* (emphasis added)

Applicants maintain that Grimwood does not teach or suggest each and every feature of claim 3. For example Grimwood does not teach or suggest ...transmitting a second signal using a second transmitter in the central entity to the one or more remote devices upon termination of transmission of the first signal to the one or more remote devices, wherein the second signal includes timing information based on the second symbol clock and data having a second FEC alignment that is synchronized with first FEC alignment. In order to maintain the synchronization between the central entity and one or more remote devices, claim 3

teaches transmitting two downstream signals, using two transmitters, where the second signal is transmitted if and when the first signal is terminated. The FEC alignments of these two signals are synchronized. Grimwood does not teach or suggest transmitting a second signal, using a second transmitter, upon termination of the first signal.

Since Grimwood does not teach or suggest each and every feature of independent claim 3, it cannot anticipate that claim. Accordingly, Applicants respectfully request that the rejection of claim 3 under 35 U.S.C. § 102(b) be reconsidered and withdrawn.

Dependent Claim 4

Claim 4 depends from and further limits claim 3. It distinguishes from Grimwood for at least the reasons set forth above with respect to claim 3 and further in view of its own features.

Also, Applicants assert the dependent claim 4 is patentable over the applied reference in view of its additional combinations of distinguishing features. For example, the "transmitting a notification message to the one or more remote devices indicating that the first signal will be terminated prior to the termination of transmission of the first signal" feature recited in claim 4, is not explicitly or implicitly taught or suggested by Grimwood. The Examiner, on page 6 of the Office Action, relies on Figure 6 and paragraph [0014] of Grimwood to allegedly show this feature. Grimwood discloses that timestamp messages are normally sent in downstream to establish reference to the CU master clock. However, Grimwood does not teach or suggest transmitting a *notification message* to the one or more remote devices indicating *that the first signal will be terminated* prior to the termination of transmission of the first signal, as recited in claim 4.

Accordingly, Applicants respectfully request that the rejection of claim 2 under 35 U.S.C. § 102(b) be reconsidered and withdrawn.

Independent Claim 5

The Examiner rejected claim 5 under 35 U.S.C. § 102(b) as allegedly being anticipated by US Application Publication No. US 2001/0033611 A1 to Grimwood *et al.* ("Grimwood"). For the reasons set forth below, Applicants respectfully traverse.

Independent claim 5 recites a method for *maintaining synchronization* in a communication system. The method includes the steps of:

> synchronizing a first symbol clock and a second symbol clock in the central entity;
>
> transmitting a first signal using a first transmitter in the central entity to the one or more remote devices, wherein the first signal includes timing information based on the first symbol clock and data having a first forward error correction (FEC) alignment;
>
> generating a *second signal* that includes timing information based on the second symbol clock and data having a second forward error correction (FEC) alignment;
>
> *transmitting calibration information* relating to a difference between the first FEC alignment and the second FEC alignment to the one or more remote devices; and
>
> *upon termination of transmission of the first signal to the one or more remote devices, transmitting the second signal using a second transmitter in the central entity to the one or more remote devices.* (emphasis added)

As explained above, claim 5 is not anticipated by Grimwood for at least the following reasons: (1) Grimwood does not teach or suggest transmitting calibration information relating to a difference between the first FEC alignment and the second FEC alignment to the one or more remote devices and (2) Grimwood does not teach or suggest transmitting a second signal using a second transmitter in the central entity to the one or more remote devices upon termination of transmission of the first signal to the one or more remote devices, as described above with respect to claim 1.

The Examiner, on page 4 of the Office Action, relies on Grimwood's Figure 10, element 320 and Figure 11, element 360 to allegedly show the first feature noted above. The Grimwood arrangement calculates a sync adjustment in FEC frames and inserts timestamps in order to lower jitter (see Grimwood FIGS. 8, 9, 10, and 11). But Grimwood does not teach or suggest transmitting calibration information relating to a ***difference*** between FEC alignments of two different signals (transmitted from two different transmitter) to one or more remote devices as required by claim 5.

Since Grimwood does not teach or suggest each and every feature of independent claim 5, it cannot anticipate that claim. Accordingly, Applicants respectfully request that the rejection of claim 5 under 35 U.S.C. § 102(b) be reconsidered and withdrawn.

Dependent Claims 6-8

Claim 6-8 depend from and further limits claim 5. They distinguish from Grimwood for at least the reasons set forth above with respect to claim 5 and further in view of their own features.

Also, Applicants assert the dependent claim 8 is patentable over the applied reference in view of its additional combinations of distinguishing features. For example, the "transmitting a notification message to the one or more remote devices indicating that the first signal will be terminated prior to the termination of transmission of the first signal" feature recited in claim 8, is not explicitly or implicitly taught or suggested by Grimwood. The Examiner, on page 6 of the Office Action, relies on Figure 6 and paragraph [0014] of Grimwood to allegedly show this feature. Grimwood discloses that timestamp messages are normally sent in downstream to establish reference to the CU master clock. However, Grimwood does not teach or suggest transmitting a *notification message* to the one or more remote devices indicating *that the first signal will be terminated* prior to the termination of transmission of the first signal, as recited in claim 8.

Accordingly, Applicants respectfully request that the rejection of claims 6-8 under 35 U.S.C. § 102(b) be reconsidered and withdrawn.

Independent Claim 9

The Examiner rejected claim 9 under 35 U.S.C. § 102(b) as allegedly being anticipated by US Application Publication No. US 2001/0033611 A1 to Grimwood *et al.* ("Grimwood"). For the reasons set forth below, Applicants respectfully traverse.

Applicants maintain that Grimwood does not teach or suggest each and every feature of claim 9. Independent claim 9 recites an apparatus in a communication system, the apparatus comprising:

> a **first downstream transmitter** adapted to transmit a first downstream signal to one or more remote devices, wherein the first downstream signal includes first timing information based on a first symbol clock;
>
> *a **second downstream transmitter** adapted to transmit a second downstream signal to the one or more remote devices in response to the first downstream transmitter terminating transmission of the first downstream signal, wherein the second downstream signal includes second timing information based on a second symbol clock; and*
>
> a synchronization element adapted to synchronize the first symbol clock and the second symbol clock. (emphasis added)

Independent claim 9 is not anticipated by Grimwood for at least the reason that Grimwood does not teach or suggest an apparatus comprising a second downstream transmitter adapted to transmit a second downstream signal to the one or more remote devices in response to the first downstream transmitter terminating, wherein the second downstream signal includes second timing information based on a second symbol clock. The apparatus of claim 9 comprises two downstream transmitters, a first downstream transmitter adapted to transmit a first downstream signal to one or more remote devices and a second downstream transmitter adapted to transmit a second downstream signal to one or more remote devices.

The Grimwood arrangement has *one transmitter* in the central unit (CU) transmitting *downstream signal* and *one transmitter* in the remoter unit (RU) transmitting *upstream signal*. Therefore, Grimwood does not teach or suggest a second downstream transmitter that transmits a second downstream signal if and when the first downstream transmitter terminates transmission.

Moreover, the Examiner, on page 5 of the Office Action, analogizes a first downstream transmitter of the instant application to Fig. 13 of Grimwood.

> a first transmitter (Fig. 13, transmitter is intended to operate in the CU upstream or downstream, paragraph [0220], page 22, lines 7-9)

Also, the Examiner, on page 5 of the Office Action, analogizes a second downstream transmitter of the instant application to SCDMA RU transmitter of Grimwood.

> a second transmitter (SCDMA RU transmitter, paragraph [0017], page 2, lines 1-2)

Applicants respectfully disagree. On the contrary, in both cases the Examiner is referring to one transmitter, an SCDMA RU upstream transmitter for use in an 802.14 or MCNS type systems (Grimwood, page 3, paragraph [0032]).

Since Grimwood does not teach or suggest each and every feature of independent claim 9, it cannot anticipate that claim. Accordingly, Applicants respectfully request that the rejection of claim 9 under 35 U.S.C. § 102(b) be reconsidered and withdrawn.

Dependent Claims 10-11

Claims 10-11 depend from and further limit claim 9. They distinguish from Grimwood for at least the reasons set forth above with respect to claim 9 and further in view of their own features.

Also, Applicants assert the dependent claim 10 is patentable over the applied reference in view of its additional combinations of distinguishing features. For example, the "the first downstream transmitter transmits a notification message to the one or more remote

devices indicating that the first downstream signal will be terminated prior to the termination of transmission of the first downstream signal" feature recited in claim 10, is not explicitly or implicitly taught or suggested by Grimwood. The Examiner, on page 6 of the Office Action, relies on Figure 6 and paragraph [0014] of Grimwood to allegedly show this feature. Grimwood discloses that timestamp messages are normally sent in downstream to establish reference to the CU master clock. However, Grimwood does not teach or suggest the first downstream transmitter transmits a *notification message* to the one or more remote devices indicating *that the first downstream signal will be terminated* prior to the termination of transmission of the first downstream signal, as recited in claim 10.

Accordingly, Applicants respectfully request that the rejection of claims 10-11 under 35 U.S.C. § 102(b) be reconsidered and withdrawn.

Independent Claim 12

The Examiner has rejected claim 12 under 35 U.S.C. § 102(b) as being anticipated by US Application Publication No. US 2001/0033611 A1 to Grimwood *et al.* ("Grimwood"). For the reasons set forth below, Applicants respectfully traverse.

Claim 12 reads:

> An apparatus in a communication system, the apparatus comprising:
>
> a **first downstream transmitter** adapted to transmit a first downstream signal to one or more remote devices, wherein the first downstream signal includes first timing information based on a first symbol clock and first data having a first forward error correction (FEC) alignment;
>
> *a **second downstream transmitter** adapted to transmit a second downstream signal to the one or more remote devices in response to the first downstream transmitter terminating transmission of the first downstream signal, wherein the second downstream signal includes second timing information based on a second symbol clock and second data having a second FEC alignment that is synchronized with the first FEC alignment;* and

a synchronization element adapted to synchronize the first symbol clock and the second symbol clock. (emphasis added)

Claim 12 is not anticipated by Grimwood for at least the reason that Grimwood does not teach or suggest and apparatus having ***two downstream transmitters***, where the second downstream transmitter transmits a second downstream signal to the a remote device if and when the first downstream transmitter terminates transmission of the first downstream signal, and where second downstream signal includes second timing information based on a second symbol clock and second data having a second FEC alignment that is synchronized with the first FEC alignment.

Since Grimwood (Grimwood structure explained above) does not teach or suggest each and every feature of independent claim 12, it cannot anticipate that claim. Accordingly, Applicants respectfully request that the rejection of claim 12 under 35 U.S.C. § 102(b) be reconsidered and withdrawn.

Dependent Claims 13-14

Claims 13-14 depend from and further limit claim 12. They distinguish from Grimwood for at least the reasons set forth above with respect to claim 12 and further in view of their own features.

Also, Applicants assert the dependent claim 13 is patentable over the applied reference in view of its additional combinations of distinguishing features. For example, the "the first downstream transmitter transmits a notification message to the one or more remote devices indicating that the first downstream signal will be terminated prior to the termination of transmission of the first downstream signal" feature recited in claim 13, is not explicitly or implicitly taught or suggested by Grimwood. The Examiner, on page 6 of the Office Action, relies on Figure 6 and paragraph [0014] of Grimwood to allegedly show this feature. Grimwood discloses that timestamp messages are normally sent in downstream to establish

reference to the CU master clock. However, Grimwood does not teach or suggest the first downstream transmitter transmits a *notification message* to the one or more remote devices indicating *that the first downstream signal will be terminated* prior to the termination of transmission of the first downstream signal, as recited in claim 13.

Accordingly, Applicants respectfully request that the rejection of claim 2 under 35 U.S.C. § 102(b) be reconsidered and withdrawn.

Independent Claim 15

The Examiner has rejected claim 15 under 35 U.S.C. § 102(b) as being anticipated by Publication No. US 2001/0033611 A1 to Grimwood *et al.* ("Grimwood"). For the reasons set forth below, Applicants respectfully traverse.

Claim 15 reads:

> An apparatus in a communication system, the apparatus comprising:
>
> a **first downstream transmitter** adapted to transmit a first downstream signal to one or more remote devices, wherein the first downstream signal includes first timing information based on a first symbol clock and first data having a first forward error correction (FEC) alignment;
>
> *a **second downstream transmitter** adapted to transmit a second downstream signal to the one or more remote devices in response to the first downstream transmitter terminating transmission of the first downstream signal, wherein the second downstream signal includes second timing information based on a second symbol clock and second data having a second FEC alignment*; and
>
> a synchronization element adapted to synchronize the first symbol clock and the second symbol clock;
>
> wherein at least one of the first downstream transmitter and the second downstream transmitter is adapted to transmit calibration information relating to a difference between the first FEC alignment and the second FEC alignment to the one or more remote devices. (emphasis added)

Claim 15 is not anticipated by Grimwood for at least the reasons that Grimwood does not teach or suggest (1) an apparatus comprising two downstream transmitters where "a second downstream transmitter adapted to transmit a second downstream signal to the one or more remote devices in response to the first downstream transmitter terminating transmission of the first downstream signal, where in the second downstream signal includes second timing information based on a second symbol clock and second data having a second FEC alignment that is synchronized with the first FEC alignment," and (2) "wherein at least one of the first downstream transmitter and the second downstream transmitter is adapted to transmit calibration information relating to a difference between the first FEC alignment and the second FEC alignment to the one or more remote devices."

Since Grimwood (see explanation of Grimwood above) does not teach or suggest each and every feature of independent claim 15, it cannot anticipate that claim. Accordingly, Applicants respectfully request that the rejection of claim 15 under 35 U.S.C. § 102(b) be reconsidered and withdrawn.

Dependent Claims 16-19

Claims 16-19 depend from and further limit claim 15. They distinguish from Grimwood for at least the reasons set forth above with respect to claim 15 and further in view of their own features.

Also, Applicants assert the dependent claim 18 is patentable over the applied reference in view of its additional combinations of distinguishing features. For example, the "the first downstream transmitter transmits a notification message to the one or more remote devices indicating that the first downstream signal will be terminated prior to the termination of transmission of the first downstream signal" feature recited in claim 18, is not explicitly or implicitly taught or suggested by Grimwood. The Examiner, on page 6 of the Office Action, relies on Figure 6 and paragraph [0014] of Grimwood to allegedly show this feature.

Grimwood discloses that timestamp messages are normally sent in downstream to establish reference to the CU master clock. However, Grimwood does not teach or suggest the first downstream transmitter transmits a *notification message* to the one or more remote devices indicating *that the first downstream signal will be terminated* prior to the termination of transmission of the first downstream signal, as recited in claim 18.

Accordingly, Applicants respectfully request that the rejection of claims 16-19 under 35 U.S.C. § 102(b) be reconsidered and withdrawn.

Conclusion

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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